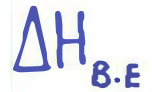




TT



"Need to know" ΔH 's



Lattice Enthalpy - ΔH_{LATT}

Equal & Opposite

→ +

+ →

Factors Affecting ΔH_{LATT}

①

②

e.g.

e.g.

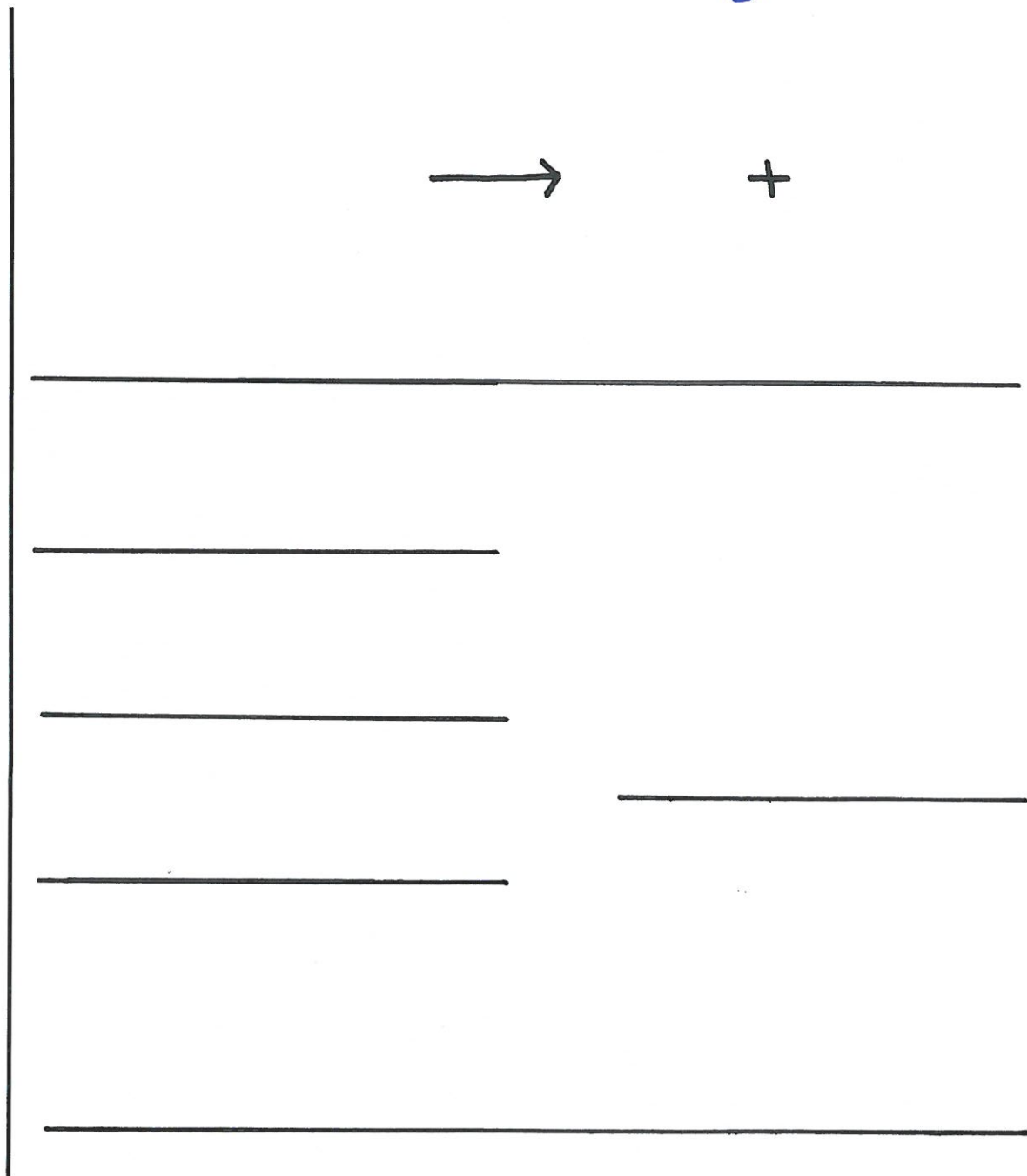


Born - Haber Cycles

1 2 3 4 5

→ +

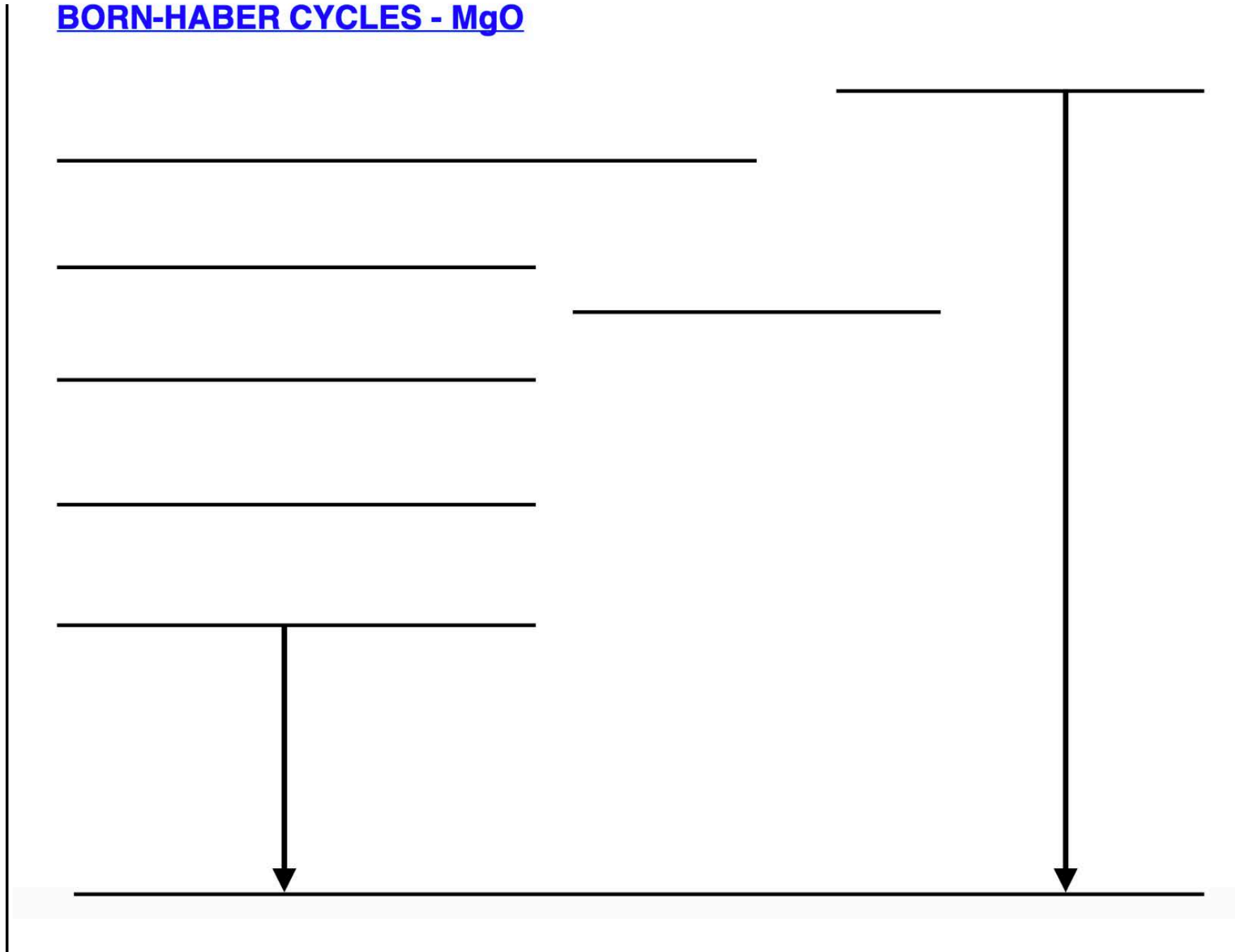
Enthalpy Changes Needed



-
-
-
-

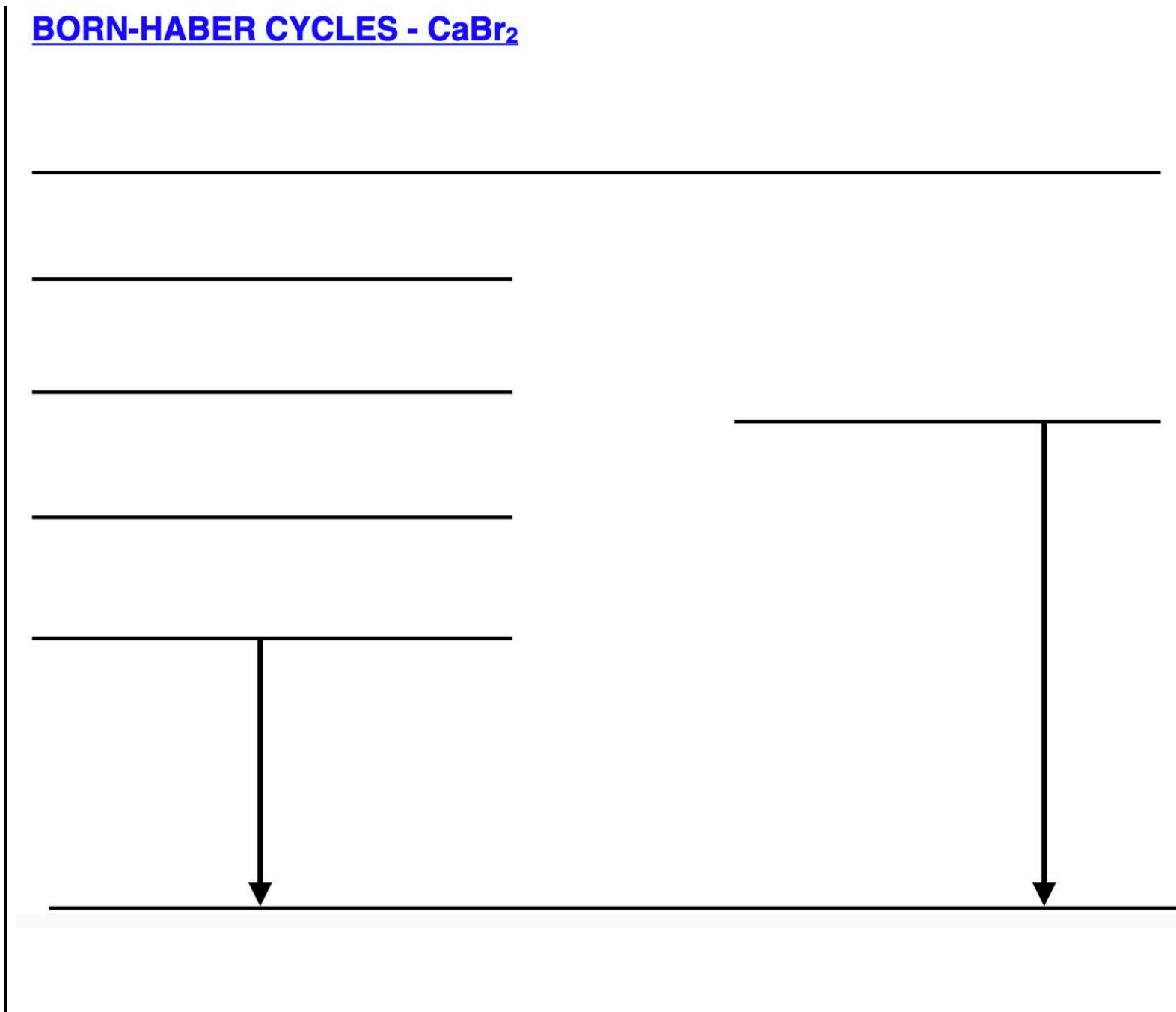


BORN-HABER CYCLES - MgO





BORN-HABER CYCLES - CaBr₂





Born-Haber Vs Perfect Ionic Model

1 2 3 4 5

- The perfect ionic model assumes that ionic compounds have:

a)

b)

- Covalent character

when:

The Difference

e.g.

Enthalpy of Solution - ΔH_{sol}^\ominus

- 1
- 2
- 3
- 4
- 5



ie.

→ +

The Equation!

= +

①

→ +

②

→
→

The Balance



ENTHALPY OF SOLUTION - Example Question 1

1. Define the term Enthalpy of Solution?

.....
.....

2. Write the equation that represents the Enthalpy of Solution of Magnesium Chloride.

.....

3. Calculate the Enthalpy of Solution for Magnesium Chloride, given that:

$$\Delta H^{\ominus}_{\text{Lattice}} \text{MgCl}_2 = 2493 \text{ kJ.mol}^{-1}$$

$$\Delta H^{\ominus}_{\text{Hydration}} \text{Mg}^{2+} = -1920 \text{ kJ.mol}^{-1}$$

$$\Delta H^{\ominus}_{\text{Hydration}} \text{Cl}^- = -364 \text{ kJ.mol}^{-1}$$

.....
.....
.....
.....
.....



ENTHALPY OF SOLUTION - Example Question 2

1. Complete the Enthalpy changes and equations for Barium Sulfate.

Enthalpy Change	Equation	Value
$\Delta H^\ominus_{\text{Lattice BaSO}_4}$		+2383
$\Delta H^\ominus_{\text{Hydration Ba}^{2+}}$		X
$\Delta H^\ominus_{\text{Hydration SO}_4^{2-}}$		-1004
	$\text{BaSO}_{4(s)} \rightarrow \text{Ba}^{2+}_{(aq)} + \text{SO}_4^{2-}_{(aq)}$	+19

2. Calculate the missing value for the $\Delta H^\ominus_{\text{Hydration}}$ of Ba^{2+} (X)

.....

.....

.....

.....

.....